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Role of nurses in implementing chronic care model in subdistrict health promoting hospital

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ABSTRACT

Registered nurses in a subdistrict health promoting hospital (SHPH) have a significant role in developing and improving care for patients with chronic diseases. This cross-sectional descriptive study aimed to assess the role of nurses in an implementation of chronic care model (CCM) at SHPH in Nakhon Ratchasima province, Thailand, and to analyze its related factors. The samples included 200 registered nurses who responded to self-administered questionnaires and were selected by simple random sampling. Descriptive statistics and chi-square test analysis were used for data analyses. The study found that the role of nurses in implementation of CCM was at a reasonable level. When each aspect was considered, it was found that health care organization and delivery system design were at high levels; clinical information systems, self-management support and decision support systems were also at high levels. The aspect with the lowest level was community resources and policy. Motivation to work effort and organizational support were statistical significantly (p<0.05) related to the role of nurses in the implementation of CCM. The encouragement and motivation to work effort, and organizational support for chronic diseases care should be provided.

Keywords: chronic disease management; nurses; chronic disease model; role of nurses

1. INTRODUCTION

Chronic diseases or non-communicable diseases (NCDs) are health problems with a slow progression, long duration, and often with a long latency period. The four major types of chronic diseases are cardiovascular diseases, cancers, chronic pulmonary diseases, and diabetes; these are associated with four common behavioral risk factors (tobacco use, excessive alcohol consumption, poor diet, and a lack of physical activity) (Hunter & Reddy, 2013; Thangkratok et al., 2018). The number of deaths attributed to chronic diseases has increased worldwide and in every region since 2000, when there were 31 million constant disease deaths. From a total of 56.4 million deaths worldwide in 2015, 36 million were due to deaths resulting from chronic diseases (World Health Organization, 2011). Regarding the global economic effects of chronic diseases, many economists have expressed increasing concern that chronic diseases will result in long-term macroeconomic impacts on the labor supply, capital

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accumulation, and gross domestic product (GDP) worldwide, with the consequences being most severe in developing countries (Bloom et al., 2011). The impacts of chronic diseases have a significant economic effect, which represent substantial indirect and direct costs for both society and individuals.

The chronic care model (CCM) was designed using evidence-based practices and research intervention of managed care that provide for chronic diseases patients (Bodenheimer et al., 2002). The CCM has been employed to assist with the transition from a reactive to a proactive healthcare system, with interventions designed to improve high-quality outcomes for patients with chronic diseases. The role of nurses in CCM are described by the International Council of Nurses (Furtado & Nóbrega, 2013; Thangkratok, 2017), specifically for each of the elements of CCM. The evidence has been summarized that the role of nurses is in a vital position for implementing the framework to improve the quality of chronic diseases cares, due to their participation in patient-centered care teams.

Nurses are a considerable group of health care professionals (Elison et al., 2015) who have a significant role in CCM for patients with chronic diseases that will enable patients with chronic diseases to be effectively managed with appropriate specialist care services (Canadian Nurses Association, 2012). The significant nurse roles consist of providing for integrated care, health promotion, screening and finding patients with risk factors for chronic diseases, chronic diseases prevention, self-management support for individual patients, chronic diseases planning and implementing systems care, and collaboration with members of multidisciplinary teams and health system management for chronic diseases patients at a primary health care level (Darker et al., 2012; O'Reilly et al., 2014; Thangkratok et al., 2017). There is also a focus on helping and motivating patients to reduce risk factors and to make lifestyle changes. In implementing CCM, the nurses have been identified as a key to success (Furtado & Nóbrega, 2013; Thangkratok, 2017). Nurses are considered to be leaders in participation for chronic diseases care, which essentially presents productive interactions between the health care teams, patients and families (Bodenheimer et al., 2005; Furtado & Nóbrega, 2013). They must use their skills and abilities in work management to be highly developed for a good quality of practice.

Employees' satisfaction is a major factor in the delivery of high-quality care. To achieve this, they need to understand the factors affecting job satisfaction and dissatisfaction. In this study, the factors related to CCM were studied following Schermerhorn's theory (Schermerhorn, 2000) and Herzberg's two-factor theory (Herzberg et al., 2010) to investigate how they affect additional expansion that built the power found in high-quality care. There is not enough data on related factors in the role of nurses in implementation of CCM using knowledge, attitude, motivation, and an organizational support level, which is based on data from Thai nurses. Therefore, this study aimed to assess the role of nurses in implementing CCM at subdistrict health promoting hospital (SHPH) in Nakhon Ratchasima province, Thailand, and to analyze its related factors.

2. MATERIALS AND METHODS

2.1 Study design and participants

This study was a cross-sectional descriptive study. The samples of this study were 200 nurses in SHPH, Nakhon Ratchasima province, Thailand. The sample size was calculated from total population of 349 persons (Nakhon Ratchasima Provincial Health Office, 2015); standard value from normal distribution with 95% confidence interval (α=0.05) was 1.96. The proportion of nurses who had a good level of health promotion practice in the northern region of Thailand was 55% (Wipada et al., 2015) and precision of the study was set at 5%. The minimum samples of this study were 183 nurses. Ten percent of the samples were

added up, therefore, the samples of this study were 200 nurses.

Registered nurses with the following inclusion criteria were recruited by simple random sampling: an individual who has worked in SHPH, Nakhon Ratchasima province for more than one year, who has not taken vacation, sick leave, maternity leave or study leave during the study period. Data were collected from December 2016 to February 2017 by a self-administered questionnaire. After their written informed consent was obtained, the participants were asked to complete the survey for four weeks. The questionnaire from all SHPH were collected and checked the completeness.

2.1.1 Study instruments

The questionnaire was used to collect the data by self-assessment without having the real performance examination on evidence, documents, observations, or interviews about the performance of the samples. The questionnaire consisted of six parts as follows:

1) Individual attributes: There were six open-ended questions including age, education, work experience in SHPH, experiences in health-related work before working in SHPH and training.

2) Knowledge of chronic diseases care: A multiple choice questionnaire with 20 items was developed covering pathophysiology, sign and symptoms (4 items), risk factors (4 items), nursing care (5 items) and treatment and management approaches (7 items). A score of "1" was given to a correct answer while a score of "0" was given to incorrect answers. A total score, which ranged from 0 to 20, was divided into three levels using Bloom's classification methods (Bloom, 1971) as follows: high (score 16-20), moderate (score 12-15) and low (score 0-11).

3) Positive attitude towards the care of the patient with chronic diseases: A 20-item questionnaire was developed covering opinions on affection (6 items), cognition (6 items) and behavioral dimensions (8 items), and was evaluated by a four-point rating scale. Scores 1 to 4 were assigned to "strongly disagree" to "strongly agree" for a positive attitude towards the care of patients with chronic diseases and vice versa for negative comments. A total score, which ranged from 20 to 80, was divided into three levels by dividing the range into three classes (Best & Kahn, 1996) as follows: low (score 20.00-39.99), moderate (score 40.00-59.99) and high (score 60.00-80.00).

4) Motivation to work effort: A questionnaire was developed based on Herzberg's theory. There were 21 items which covered dimensions on work achievement (5 items), recognition (5 items), job character (5 items), the opportunity for job responsibility (4 items) and job advancement (2 items), and were evaluated by a four-point rating scale. Scores 1 to 4 were assigned for "strongly disagree" to "strongly agree". A total score, which ranged from 21 to 84, was divided into three levels by dividing the range into three classes (Best & Kahn, 1996) as follows: low (score 21.00-41.99), moderate (score 42.00-62.99) and high (score 63.00-84.00).

5) Organizational support: A 22-item questionnaire was developed covering policy (5 items), health workforce (3 items), health information system (7 items) and medical products (7 items), and were evaluated by a three-point rating scale. A score of "1" was given to a low response and a score of "3" was given to a high response, while a score of "2" was given to an uncertain response. A total score, which ranged from 22 to 66, was divided into three levels by dividing the range into three classes (Best & Kahn, 1996) as follows: low (score 22.00-36.66), moderate (score 36.67-51.33) and good (score 51.34-66.00).

6) Role of nurses in implementation of CCM: A questionnaire was developed based on the work activities of nurses in the CCM as described by the International Council of Nurses. The level of participation in the CCM consisted of healthcare system organization (4 items), delivery system design (9 items), clinical information systems (3 items), self-

management support (4 items), decision support (4 items) and community resources and policy (4 items). They were evaluated by a five-point rating scale. Scores 1 to 5 were assigned to “strongly disagree” to “strongly agree”. A total score, which ranged from 28 to 140, was divided into three levels by dividing the range into three classes (Best & Kahn, 1996) as follows: low (score 28.00-65.32), moderate (score 65.33-102.65) and high (score 102.66-140.00).

Three experts and reliability tested content validity of all questions were tried out with 30 nurses in SHPH, Buriram province, Thailand. The reliability of knowledge of chronic diseases care questionnaire was analyzed using Kuder-Richadson 20, and knowledge of chronic diseases care, positive attitude towards care of patient with chronic diseases, motivation to work effort, organizational support, and the role of nurses in implementation of the chronic care model questionnaire were analyzed using Cronbach’s alpha coefficient and were 0.72, 0.83, 0.86, 0.80 and 0.84, respectively.

2.1.2 Statistical analyses

The data obtained were analyzed using SPSS statistics version 23 software. Individual attributes, knowledge of chronic diseases care, attitude, motivation to work effort, organizational support, and role of nurses in the implementation of CCM were analyzed by frequency, percentage, mean and standard deviation. The chi-square or Fisher's exact test was used for investigating to identify the association between each independent variable and the role of nurses in implementation of CCM with the significance level being set at 0.05.

2.1.3 Ethical considerations

The research was conducted in accordance with the principals of the declaration of Helsinki and approved by the Faculty of Public Health ethics review committee, Mahidol University before being conducted (Approval No. MUPH 2016-124).

3. RESULTS

The samples of this study were 200 nurses. It was found that 76% of nurses were over 35 years of age with an average age of 41.32±8.61. The average time they had been working at SHPH was 8.27±6.43 years. Regarding training on chronic diseases care, the majority had received training on chronic diseases management at 78% (Table 1).

It was found that 78% of nurses had a high level of overall knowledge on chronic diseases with a mean of 16.61±1.47 as shown in Table 2. Regarding positive attitude toward chronic diseases care, it was found that 82.5% of nurses had a moderate response with a mean score of 55.88±3.21. Nurses’ overall motivation to work effort was found to be at a high level of 66%, followed by moderate of 34%. When each aspect of motivation to work effort was analyzed, it was found that the aspects of recognition, job interest, advancement, achievement, and responsibility were at a high level of 66%, 94%, 92%, 60%, and 70%, respectively. Nurses’ overall organizational support was found to be at a high level at 94%, followed by moderate of 6%. When each aspect of regulatory support was analyzed, it was found that the elements of policy, health workforce, health information system, and medical products were of 92%, 90%, 96%, and 78%, respectively (Table 2).

From the study, it was found that participants’ level of the role of nurses in implementation of CCM was at a high level of 70%, followed by the moderate level of 28%, and low level of 2% with the mean score of 108.20±15.18. When each aspect was considered, it was found that health care organization, delivery system design, clinical information systems, self-management support, decision support systems, and community resources/policy were at a high level of 74%, 76%, 70%, 60.5%, 68%, and 50.5%, respectively (Table 3). Motivation to work effort and organizational support were related to the role of nurses in

implementation of CCM with statistical significance ($p<0.05$) (Table 4).

Table 1 Individual attributes of the participants (n =200)

Individual attributes	Number	Percentage (%)
Age (year), *Mean (SD) = 41.32 (8.61), min = 23, max 55*		
≥ 35 years	152	76.0
< 35 years	48	24.0
Highest educational		
Bachelor degree	156	78.0
Master degree	24	12.0
Nurse practitioner	20	10.0
Work experience in SHPH, *Mean (SD) = 8.27 (6.43*)		
≥ 10 years	60	30.0
< 10 years	140	70.0
Training on chronic diseases care		
Never	44	22.0
Ever	156	78.0
Training Couse		
Chronic diseases management	69	44.2
Nurse Practitioner (Primary Medical Care)	24	15.4
Drug use of patients with chronic disease	20	12.8
Screening for DM and HT	14	9.0
Program for prevention for DM and HT	10	6.4
Nutrition Care of patients with chronic disease	8	5.1
Case Manager Program	7	4.5
Diabetic and Foot Care	4	2.6

Table 2 Participants' level of the knowledge, positive attitude toward chronic diseases care, motivation to work effort and organizational support (n = 200)

Variables	High		Moderate		Low		Mean	SD	Possible
	n	%	n	%	n	%			score
Knowledge	156	78.0	44	22.0	0	0.0	16.61	1.47	0-20
Positive attitude overall	35	17.5	165	82.5	0	0.0	55.88	3.21	20-80
Affection	28	14.0	172	86.0	0	0.0	16.19	1.13	6-24
Cognition	27	13.5	173	86.5	0	0.0	16.20	1.51	6-24
Behavior	80	40.0	120	60.0	0	0.0	23.50	2.16	8-32
Motivation overall	132	66.0	68	34.0	0	0.0	67.37	7.92	21-84
Achievement	132	66.0	68	34.0	0	0.0	15.15	1.61	5-20
Recognition	188	94.0	12	6.0	0	0.0	17.01	2.29	5-20
Job interest	184	92.0	16	8.0	0	0.0	17.08	2.24	5-20
Responsibility	120	60.0	76	38.0	4	2.0	12.45	2.66	4-16
Advancement	140	70.0	40	20.0	20	10.0	5.70	1.64	2-8
Organizational support overall	188	94.0	12	6.0	0	0.0	59.10	5.39	22-66
Policy	184	92.0	12	6.0	4	2.0	14.24	1.60	5-15
Health workforce	180	90.0	16	8.0	4	2.0	7.98	1.21	3-9
Health information system	192	96.0	8	4.0	0	0.0	19.66	1.83	7-21
Medical products	156	78.0	36	18.0	8	4.0	17.21	2.36	7-21

Table 3 Participants' level of the role of nurses in implementation of CCM (n = 200)

Variables	High		Moderate		Low		Mean	SD	Possible
	n	%	n	%	n	%			score
Overall	140	70.0	56	28.0	4	2.0	108.20	15.18	28-140
Health care organization	148	74.0	48	24.0	4	2.0	15.64	2.45	4-20
Delivery system design	151	76.0	44	22.0	4	2.0	36.51	5.48	9-45
Clinical information systems	140	70.0	56	28.0	4	2.0	11.63	1.98	3-15
Self-management support	121	60.5	75	37.5	4	2.0	14.78	2.24	4-20
Decision support	136	68.0	64	32.0	0	0.0	15.38	2.21	4-20
Community resources/ policy	101	50.5	83	41.5	16	8.0	14.27	2.94	4-20

Table 4 Factors related to the role of nurses in implementation of CCM

Variables	Implementation of CCM				p-value
	High		Low/ moderate		
	n	%	n	%	
Age					0.613
≥ 35 years	105	69.1	47	30.9	
< 35 years	35	72.9	13	27.1	
Highest educational					0.995
Bachelor degree	109	69.9	47	30.1	
Master degree	17	70.8	7	29.2	
Nurse practitioner	14	70.0	6	30.0	
Work experience in SHPH					0.501
≥ 10 years	44	77.3	16	26.7	
< 10 years	96	68.6	44	31.4	
Training on chronic diseases care					0.074
Never	26	59.1	18	40.9	
Ever	114	73.1	42	26.9	
Knowledge					0.766
High	110	70.5	46	29.5	
Moderate	30	68.2	14	31.8	
Positive attitude					0.310
High	27	77.1	8	22.9	
Moderate	113	68.5	52	31.5	
Motivation					< 0.001*
High	112	84.8	20	15.2	
Moderate/ low	28	41.2	40	58.8	
Organizational Support					< 0.001**
High	140	74.5	48	25.5	
Moderate/ low	0	0.00	12	100.0	

* *Tested by chi-square test*

** *Tested by Fisher's exact test*

4. DISCUSSION

The participants' level for the role of nurses in implementation of CCM was found to be at a high level in all aspects. This may be due to most nurses receiving a high level of motivation from working effort and organizational support. It is evident that the public health work in Nakhon Ratchasima had a clear policy framework, especially the care of patients with chronic diseases (Nakhon Ratchasima Provincial Health Office, 2016). This resulted in nurses operating on a high level of chronic diseases management. It plays an important role and is involved in policy making, implementation planning, constant care model practice including tracking progress and performance to achieve

the set goals. Information was also provided to be used for the operational plan. This is an essential factor in the role of nurses in implementation of CCM, which was found to be at a high level in all aspects.

Nurses are considered as a critical leadership role in multidisciplinary health to implement CCM for patients with chronic diseases (Bodenheimer et al., 2005; McKenna and Collins, 2010; Wagner et al., 2001), by focusing on the integration of the nurses' roles and nursing care for patients with chronic diseases. Particularly, the nurses played a vital role in the implementation as follows: a role in shaping policies and management of chronic diseases, a role in the organization of services for patients with chronic, a role in information system to manage chronic diseases, a role in supporting self-management of chronic diseases, a role in the personal information used to help make clinical decisions on chronic disease management, and a role in promoting the participation of communities in the management of chronic diseases, which is a significant role for the improvement of the outcome of patients with chronic diseases (Furtado and Nóbrega, 2013; Thangkratok, 2017; Thangkratok et al., 2017).

Motivation to work effort was significantly related to the role of nurses in implementation of CCM. The nurses with a high level of motivation to work effort were able to perform better than those with a low or medium level of motivation to work energy. When each aspect was analyzed, it was found that all elements of motivation to work effort were significantly related to the implementation of CCM, such as work achievement, recognition, job character, opportunity for job responsibility, and job advancement. This is consistent with the study conducted by Khomeiran et al. (2006) who found that motivation to work effort profoundly affected nurse's performance. It can be seen that nurses receive the most motivating factors from their ability to care for patients with chronic diseases to have a better quality of life, their ability to care for patients with chronic diseases requiring nursing skills to be fully used, recognition from colleagues, and trust in the care of patients from supervisors. Therefore, these motivations are an essential mechanism to stimulate the body's energy, an internal force that directly impacts on the serious work effort.

Organizational support was significantly related to the role of nurses in implementation of CCM. Nurses with a high level of regulatory support were able to perform better than those with a low or medium level of organizational support. All aspects of corporate support were related to the implementation of the CCM. This is agreed with Al-Hussami (2009) who found that organizational support affected nurse's performance. It is seen that the organizational backing of being assigned in writing as the person responsible for chronic care, using local public health information to diagnose chronic diseases proactively, affected nurse's performance. This indicated that the management had a clear policy to guide implementation, resulting in the practice of nurses being more active.

5. CONCLUSION

From the study, it was found that participants' level for the role of nurses in implementation of CCM was found to be at a high level in all aspects. Factors related to the position of a nurse in the application of CCM were motivation to work effort and organizational support. The recommendation from the research findings is that the Ministry of Public Health should provide encouragement and motivation to work effort, and regulatory support for chronic diseases care.

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